

AVIATION WEEK

INCORPORATING AVIATION AND AVIATION NEWS

A MCGRAW-HILL PUBLICATION

FOR AIRCRAFT ENGINES . . . AIRCRAFT SPARK PLUGS

THE NEW **BG** 707SR SPARK PLUG *for Light Aircraft*



This new **BG** spark plug, one of a series designed and priced for privately owned and other light aircraft, is a fitting complement to the world renowned **BG** RB19R spark plug used by almost every airline in the world. The new plug employs the same ceramic insulating material as the transport aircraft plug, the RB19R, and is engineered to provide long service life, low maintenance cost, high performance and unsurpassed dependability.



The **BG** 707SR has been approved by Continental Motors as standard equipment on engines for privately owned and other light aircraft.

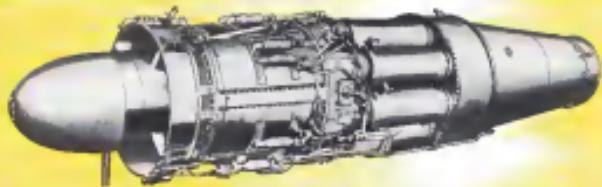
The **BG** 707SR is now in use on North American's NAvion, one of the fastest, finest, all purpose private planes.



THE **BG** CORPORATION

136 West 52nd Street, New York 19, N. Y.

MANUFACTURERS OF BOTH CERAMIC-INSULATED AND MICA-INSULATED AVIATION SPARK PLUGS



The General Electric T33 jet engine shown above shows the internal parts of this jet aircraft engine. It has 100,000 lbs. of thrust at sea level and is used in the Convair 880, the Boeing 727, and the McDonnell Douglas DC-9. It is also used in the Douglas A3D-2 and the Lockheed Electra. Both are Thompson products.

The jet engine was a toy 2000 years ago!



Recently, De-Lorenz De-Irons were used in the construction of a primitive jet engine by Thompson Products for the 70th Ann. The engine was successfully powered. Here is a photograph of a 19th century model of the same device.

THE BASIC PRINCIPLES OF JET PROPULSION have been known since Hero of Alexandria, 130 years B.C., designed a primitive engine to operate a toy.

In the centuries following, many inventors and engineers tried to perfect a workable jet engine, but failed because materials could not be found that would stand up under intense heat and heavy centrifugal strains.

A never-ending search for high-strength, heat-resisting alloys, and better methods to turn them into precision parts for modern jet engines, has been an important part of Thompson research and engineering.

Just as Thompson improvements in piston design and engineering have contributed to increased operating life and efficiency of reciprocating engines, so will jet-propulsion engines benefit by continued Thompson research.

Thompson  **Products**

CLEVELAND • DETROIT • LOS ANGELES • ST. CATHARINES, ONTARIO

Staying afloat
B.F. Goodrich
FIRST IN RUBBER



How rubber can stretch an airplane

THE AIRLINES have maintained schedules with De-Iron passengers for fifteen years. Business men can "stretch" the utility of their own planes the same way.

For B.F. Goodrich engineers have worked with the manufacturers of practically every plane of twin-engine size and larger to develop customized De-Irons for each model. The manufacturers now build De-Iron plumbing right into all these planes. Today, De-Irons specially made for each of these planes are as easy to order as a new airplane tire.

Two main advantages to owners and pilots result: 1) increased availability—De-Irons help insure unimpeded trips, eliminate delays due to icing conditions, 2) added safety. De-Irons keep the leading edges of wing and tail clean of ice, permit normal flying. A CAA requirement for airlines, De-Irons have proved to be the best ice removal device ever developed for airplanes. They protect all leading edges. They're light weight, yet tough. And they're tailored for the individual requirements of each plane model.

With the plumbing for De-Irons already built in, the cost of De-Iron installation is low—usually only 3½ to 7½% of the plane's total value. That's cheap insurance. A network of B.F. Goodrich distribution with complete facilities for mailing and servicing De-Irons for all planes completes the picture. **The B.F. Goodrich Company, Aeronautical Division, Akron, Ohio.**

B.F. Goodrich
FIRST IN RUBBER

AVIATION WEEK

Vol. 87

No. 6

INCORPORATING AVIATION AND AVIATION NEWS

Tracing cloth
that defies
time



• The success of Imperial Tracing Cloth goes back well over half a century. It is the only tracing cloth that can be used for the durability of its high transparency and its holding surface and the purity of its cloth base.

Imperial Tracing Cloth is made ready, without stretch or draw, from connecting points of the finest fibers. Drawings made on Imperial Tracing Cloth are permanent and good for any weather, battle or exposure. If you like a color surface, for sheet, card, pencil, etc., try Imperial Tracing Cloth. It's good for ink as well.



**IMPERIAL
TRACING
CLOTH**

SOLO BUILDING STATIONERY AND TRA-
CING MATERIAL DEALERS EVERYWHERE

The Aviation Week	7	Production Briefing	31
News Digest	8	New Aviation Products	39
Headline News	11-12	Sales & Service	43-49
Industry Observations	14	Bringing for Dealers	49
Letters	24	Transport	53-62
Financial	27	Advertisers' Index	65
Engineering - Production	30-39	Editorial	66

Editorial Staff

MANAGER

John Foster Jr.
executive editor

Marilyn M. Morell
executive editor

Robert H. Marin
executive editor

Albert E. Szymanski, Jr. *Engineering*

Irving Stone *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*

Marie Adams *Editorial*

Editorial Assistant

Robert E. Szymanski, Jr. *Engineering*

John Foster Jr. *Business*

Wilhelm Krueger *Passenger*

Alexander Schlesinger *Passenger*

Charles L. Atkinson *Passenger*

Ernest J. Feltman *Passenger*

Doyle H. Harrelson *Passenger*

John C. Harrelson *Passenger*

Robert E. Szymanski, Jr. *Engineering*

Schultz Bangs *Passenger*

Katherine Johnson *Passenger*

Robert F. Powell *Passenger*

Robert Schlesinger *Passenger*



**THE HEART OF THE REPUBLIC
THUNDERJET AILERON CONTROL SYSTEM
IS THE ELECTROL POWER BOOST CONTROL VALVE**



THE POWER BOOST CONTROL VALVE developed by ELECTROL for the REPUBLIC THUNDERJET P-47 aileron control system is another example of the use of ELECTROL products where dependability is essential.

ELECTROL INCORPORATED
FOR BETTER HYDRAULIC DEVICES
KINGSTON, NEW YORK

CLIMBING + DESCENDING VALVES • POSITION UP VALVES • CHARGE PUMP VALVES • RELIEF VALVE • PARKING BRAKE VALVE • POWERING GEAR GEARS • GEAR MOTOR VALVE'S • ON-DIFF VALVE'S • DIVERGENT VALVE'S • CUT-OFF VALVE'S • SPEED CONTROL VALVE'S

THE AVIATION WEEK

CHARGE TO CHANGE—Aviation attention focused on Capitol Hill and the charges of Elwood Hughes against See. Owen BREWER has been partially diverted to a change in the Government's aviation administration—John R. ALLEN for William A. M. BERLICH as Assistant Secretary of Commerce for Air. Somewhere along the line in the closing days of Congress, the selection of George A. STONE, of Columbus, Ohio, picked some months ago to succeed Berlrich, was into open question. He says never went to Congress.

Appointment of Allen was a complete surprise. Indoctrinary secretary of his background relieved some of the pressure. In addition to an excellent war record in an aircraft, Allen worked with Commerce Secretary Hammann when the latter was Ambassador to Moscow. Although Allen has never held a civilian aviation post that could be considered a training ground for his new job, there is some opinion that might be an asset. He could bring a fresh approach and no pretenses to a fully rounded station.

NO COMFORT FOR CAA—One long seen up parent. His appointment should bring no end to the pressure on CAA Administrator T. F. WRIGHT to postpone decisions in deal only with Senator Hiram Johnson on aviation matters. At a recent CAA-Army-66th Infantry conference, Wright asked an infantry member to wade with the Army representatives as "I don't get along with them very well." Allen, in the regular Army before the war, served as a colonel in the AAF.

BREWSTER'S BOOMERANG—As the Hughes investigation bumbles along like a man finding something he never knew he lost, Washington observers more and more are coming to the belief that Major G. W. BREWER, in stringing up the inquis, thought he was throwing his hat in the ring for the Republican vice presidential nomination, he actually was throwing a boomerang.

Although Brewster is not a member of the investigating subcommittee, he has turned up as one of the main figures by virtue of Hughes' charges that the Maine Senator and the chief of investigation to try to force a TWA-Pan American Airways merger. The fact that merger discussions had, place at the time Hughes and they did, and that Brewster has been a long-time friend of Pan American, and that Brewster did try to persuade Hughes to embrace the chosen statement proposal, all add up to a possible reason for Brewster's political ambitions.

With the investigation muddling all over the air map, Hughes' troubles with TWA, and vice versa, are

part of the picture. TWA never has received the second \$5,000,000 Hughes loan, nor the RFC loan which Hughes said he would attempt to negotiate when he reorganized the company last spring. On top of reports that the Hughes study cost a running loss, comes strong indications of a growing interest in TWA by the default group. This interest leads further significance to the moving of TWA New York and Washington offices to Wilmington scheduled for early fall.

SECRET AS A PARTY LINE—Further light has been shed on the manner in which the investigation is being conducted, leaving little doubt as to the motivation which prompted it. Elmer Bauschild, one of the key before Hughes reported on the scene, asked who had disclosed to the newspaper the detailed account of entertainment expenses of Hughes press agent John W. Moyer, which went to the subcommittee in "secret" session. Chairman Homer Ferguson said "I haven't any idea." Actually, the list of expenses was mimeographed and handed to press representatives by committee clerks.

CHANGE IN SAFETY—While the Allen appointment and the Hughes investigation cool off, attention, the Presidential Air Safety Board was slipping out of the limelight. The change that characterized other aviation developments has been modest here, too. After a hot start, the Board has cooled off. Some close to the scene say it has hogged down. CAA Chairman James M. Landis ousted the board from its work all summer, but slow recent progress may be due to his preoccupation with other duties.

AMPHIBIOUS OPERATION—The state of change in the armed services following the merge was to be expected, but not the extent to which it has gone. The Navy is not volatile, and a trifle disgruntled about it, but some pilots have resigned their Navy commissions to accept commands in the new, independent U. S. Air Force. One was an Annapolis graduate and a lieutenant commander. He is now a lieutenant colonel in USAF. An F-80A report it has presented several pilots who resigned Navy commissions and accepted commissions in the Air Force Reserve. A further indication to the Navy's point of view is that Joe Foss, Congressional Medal of Honor winner and former Marine pilot, a now Commander of the Sixth Dakota Air National Guard, part of the USAF.

The transfer from the submarine to the airborne air force is just a trickle, but it may grow.

Take a tip from a windshield wiper



-nothing equals Stainless Steel!

Photo of U.S.S. Stainless Steel aircraft propeller and engine. Other aircraft parts shown here ready to manufacture, longer lasting, more attractive in design.

Will you drive home tonight
take a look at your windshield wiper. The chances are good that it's more than four years old. When do they look best? If they're still shiny and bright, fine from many standpoints and perhaps you can be pretty certain that they're made of Stainless Steel.

How much more do you think it

cost to make them of Stainless? We're willing to let it cost nothing extra. Why? Because parts like these jump faster and easier in Stainless Steel. They don't have to be plated either. And because Stainless Steel is so tough and strong-thinner, lighter sections can be used to do the job.

"So what?" you say. "We're not talking about aircraft engines. That's not, but the same general reasons that make Stainless better for them also make it better for the hundreds of aircraft parts, large or small, where super-mechanized performance and greater endurance can be attained at little or no increase in cost."

Admittedly there are applications where the use of Stainless Steel does add to first cost. But in the long run Stainless assures many savings. Its advantages over bare Stainless provide practical immunity to corrosion, unsurpassed resistance to heat, wear, and abrasion, a smooth surface

which needs no coating or polishing, and resistance to many common industrial materials. In addition to those pluses, such as exhaust systems, where only with Stainless has it been possible to provide the necessary resistance to retarding heat—you will find many other uses for Stainless where it will improve performance or appearance.

So take a tip from a windshield wiper built with Stainless Steel. And for best results build with U.S.S. Stainless, a perfected, service-tested metal available in the most complete range of analyses, sizes, forms, and surface finishes anywhere obtainable.

U·S·S STAINLESS STEEL

SAFES TRUNKS PLATES TADS SHEETS PIPE FLANGE NUTS SPECIAL STOCKS



7-68

UNITED STATES STEEL

AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York
CARBON-KELVIN STEEL CORPORATION, Pittsburgh & Chicago • COLUMBIA STEEL COMPANY, Inc., Louisville
NATIONAL TUBE COMPANY, Pittsburgh • TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham
UNITED STATES STEEL SUPPLY COMPANY (Milwaukee Division), Chicago • UNITED STATES STEEL EXPORT COMPANY, New York

CAA Tests Shamed For Convair Liner

Official CAA flight tests of the Convair Model 240—new designation for the Model 240—were scheduled to begin late last week, following a month of CAA ground inspection. Robert Cason, CAA South Region engineering pilot, tentatively has been assigned to do the test flight, and James Ross has drawn the flight engineer assignment.

An earlier report said that the new Convair transport had completed legal tests required for the first three aircraft, though several models yet to get the phone through CAA tests for its own certification.

Modifications in the jet exhaust cooling system include a shortening of the exhaust pipe, which now terminates about two feet ahead of the wing trailing edge. The outer oscillating cowlings are completely in the trailing edge. Stainless steel toughen protects the trailing edge fairing that might otherwise be affected by the hot exhaust. Convair claims that this revision, in addition to providing engine cooling at rest and in flight, produces a thrust of 850 lb. per engine at 24,000 hr.

Other aircraft-derived magnesium cast and forged, required by Pan American for its fleet, which includes about 50 B-707s per plane. A static load demonstration test conducted recently made on an experimental Douglas model showed the members to possess a strength slightly exceeding that of the comparable ductile cast iron.

CW, Union Sign New Wage Pact

A strike at the Columbus, Ohio, plant of the Curtis-Wright Corp. was averted when an agreement was reached between management and the UAW-CIO after a 32 hr. session.

A spokesman for the company said the new wage agreement puts its wage in excess of the 10 hr. and pay for 10 hours for 5,000 employees of the aircraft plant. Various schedules of dues was also included in the agreement.

The company and the union will add \$900,000 a year to the current payroll. A month previously the plant police issued the 10 hr. strength as agreement and the older and retired employee got 100% pay rates. The 10 hr. together with the 100% wage agreement, adds \$900,000 a year to the payroll. The contract is for two years, with a wage increase after one year. The wage rates are effective by June 23 of this year.

There is a 10% strike clause and a provision that in the event of a wildcat strike the union cannot be used under the Taft-Hartley Act.

A week previous to the agreement the union authorized the bargaining committee to call a strike if negotiations bogged down. The new agreement is contract as of Aug. 4, but negotiations resumed and an

Briefing Production News

► North American Aviation, Inc. has completed 35 of an intended 250 P-82 Twin Mustangs. Three Navy FJ-1 fighters have been built and are undergoing tests. Two B-45 jet bombers are being assembled at the main plant on Los Angeles Airport, while a production line for this plane is being set up on an unused Douglas building at Long Beach airport.

► Convair Wright Div. of United Aircraft Corp. has completed its first P-84 and the first production P-84 is now due to roll off the line earlier this month.

► McDonnell Aircraft Corp. has started wage increases totaling more than \$500,000 annually to 3,500 employees members of the International Association of Machinists. Most employees get 12 hr. per week, with shifted shifts and no double overtime exceeding 175.

► Bell Aircraft Corp. has delivered two Model 47B1 Interceptors to British Aerospace Agency, and has shipped all but two of the eleven interceptors referred by Turboprop Aircraft Y Reparations of Argentina.

► Lockheed Aircraft Corp. has received \$3,350,000 orders for 12 P-80 jet fighters for the Air National Guard, largely to 1,000 members of the Air Guard by the end of the year. Company is preparing for an employment drive to accomplish completion of Constellation sub-contract payroll of about 14,000 men due to 15,000 or less by end of year.

► Southwest Aeromotive Co., Dallas, has acquired two additional large hangars at Love Field to more than double the use of its present maintenance and storage facilities.

► Boeing Aircraft Co. has signed a contract providing for complete servicing, maintenance and modification of Alaska Airlines' Seattle Anchorage fleet of five DC-4s and seven DC-6s. Work will be done by the new Boeing Service Center.

► Consolidated Vultee Aircraft Corp. has in the past an executive version of the Convair Lear, being constructed for an unnamed Mexico City customer. Company is continuing the executive model.

► Universal Aviation Co. has been joined in Tulsa, with steps of the managerial aspect, for aircraft modification. It has received a Douglas A-26B, and has contracts for a B-17, A-10A, B-57C and four C-46. Company is headed by Donald H. Roberts, a L. Hastings and Robert Decker.

► Northwest Industries Ltd., Edmonton, Alberta, has new contracts for airplane, production, tool and maintenance with the Canadian government and private operators which will result in between 400 and 500.

► G.W. Fries Manufacturing Co., Toledo, Ohio, has joined a \$40,000,000 firm production and expanding its line of G-10 aircraft for the precision duplicating machines it is available on request from the manufacturer.

► Gibbs Peeler, Los Angeles manufacturer of Ground Controlled Approach leading equipment, on Sept. 1 will open a CCA training school for the U.S. Air Force at March Field, Calif. First students will be 200 from USAF and 12 from the Naval Air Force Air Force.

agreement was finally reached.

The 1,500 workers affected are production, maintenance and cafeteria workers. There are 30 in the latter category. They received an additional 5¢ an hour.

Goodyear Wins Suit

The Convair Aircraft Corp. of Akron has won a \$106,400 judgment involving unemployment compensation contributions. Judge Charles A. Lewis of Common Pleas Court ordered the Ohio Bureau of Unemployment Compensation to refund that amount to Goodyear or make payment to former public contributors.

The BUC held that Goodyear should contribute to the state unemployment fund for a period of 10 years, but had not done so for a period of 10 years. Goodyear had it established to a lesser rate of 1.5 percent to provide under the unemployment system since it was an old and established firm and not a new business.

The longer to a total of about 15,000, 200 CEA members contributed including \$100,000 for Convair's B-52s and \$7,000, \$500 for Northwest YL-100 aircraft night flying and travel agreement, as well as maintenance and alterations aircraft electrical equipment.

NEW AIRCRAFT

Fokker Completing New Trainer

Two or three-place Instructor for primary work nears flight test stage in fast-reviving Dutch industry. Company reports orders for 100.

Specifications and data include

	Standard	Macchiolli
Span	26 ft. 6 in.	
Length	26 ft. 11 in.	
Wings	7 ft. 10 in.	
Wing area	181 sq. ft.	
Gross weight	3,070 lb.	3,035 lb.
Useful load (2 with parachutes, or 3 without) - operator	390 lb.	380 lb.
Useful load (3 with parachutes) - fuel	225 lb.	238 lb.
Baggage	35 lb.	35 lb.
Engine or 120 volt electric start and generator		
Seating		
Wing loading	17.1 lb./sq. ft.	17.2 lb./sq. ft.
Power loading	11.2 lb./hp.	11.5 lb./hp.
Max speed, sea level	215 mph	225 mph
Cruising speed	108 mph	108 mph
Take-off duration, cruising speed	4.1 sec.	4.1 sec.
Radius	310 miles	300 miles
Climb to 3,000 ft. (0.000 M)	5.1 min.	6.2 min.
to 6,000 ft.	13.1 min.	15.0 min.
to 9,000 ft.	22.6 min.	25.0 min.
Service ceiling	15,000 ft.	17,000 ft.
Altitude ceiling	15,000 ft.	15,000 ft.
Descent rate (with 8-leaf. wind)	340 ft.	300 ft.

Now nearing completion at United Dutch Aircraft Factory Fokker at Amsterdam is the new Fokker Instructor, a two-place place primary trainer.

Normal seating is for two persons side-by-side, but unusually off of the common structure a third seat of simple construction can be added for observation purposes. The bubble-type canopy slides off for entries and exits.

The all-metal cantilever wing is of single spar construction, covered with light-colored fabric and unusually spinned metal tape. Also fuselage is, according to late reports, of laminated construction, thus varying somewhat from the aircraft's original design. Hydrodraulically operated brakes and steerable tail wheel are provided.

Propeller is of welded steel tubular construction, fabric covered. Engine cooling is built up of easily removable panels to facilitate inspection and maintenance. The power plant, a 190-hp. Lycoming D-415-A, is mounted on a welded steel tube mount. An electric starter is provided as standard equipment.

Vertical fin and rudder are both of light metal construction, with the stabilizer having a single control surface to the fuselage. Radial and electric light metal spars and ribs. All metal control. Elevator trim tab is adjustable in flight, that on the rudder is adjustable only on the ground.

The company reports that Fokker Dutch Vliegelingen N. V. has ordered 100 of the type, and negotiations are under way with the Dutch government for further orders.



...the world's greatest
style networks



...more efficient
with buildings

partners in creating



KEUFFEL & ESSER CO.

NEW YORK • HOBOKEN, N. J.
CHICAGO • ST. LOIUS • BOSTON • SAN FRANCISCO
105 ANGELES • MONTREAL

• The heart of economy is in strength. In engineers that drawings which are merely clear and legible are not enough. Creative men want their drawings to look professional, not only in essentials, but in details. K & E hope you'll agree that can help you in both industries—showing instruments and materials as well as carefully made, that many engineers and craftsmen regard them as valued partners throughout their professional careers.

For 70 years K & E products have been helping in this way to bridge the gap between thinking and doing, helping to make possible the tools, machines, appliances, construction projects, that mark our civilization. So widely is this true, it is well-aided that every engineering project of any magnitude has been completed with the help of K & E. Could you wish any easier guidance than this in the selection of your own "partners in creating"?

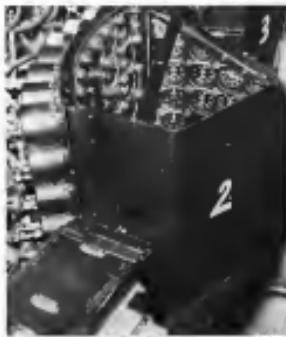
For faster, better lettering you will find

LIBBY's Lettering Set a tremendous help

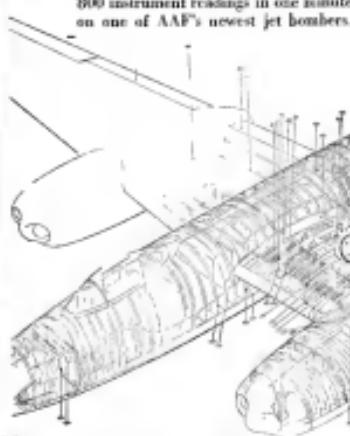
With it you can produce a wide range of lettering styles and symbols with complete uniformity. Precision lettering need no longer be tedious. For full information write to your nearest K & E Distributor or to Keuffel & Esser Co., Hoboken, N. J., Box 12, 2, Inc. 100

Recording Test Data on North American B-45

First story on methods of recording 28,000 instrument readings in one minute on one of AAF's newest jet bombers.



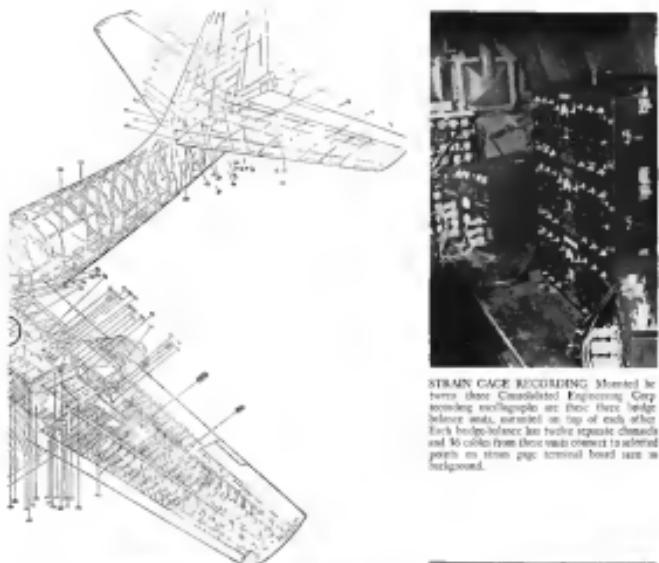
COMPACT RECORD One of five photo-encoders, the unit is fitted in small space by use of mirror to reflect 30 large instruments. Crossed (lower left) is electric magnetic indicator and is mounted on adjustable rods for exact alignment. Five photo-encoders make over total of 120 instrument digits.



TESTING POWER Supplemental electricity is required to operate recording magnetographs and photo recorders mounted in aircraft. At bottom of left is a accelerometer recording system fitted to strain gages. For this purpose flight test of B-45 minutes in 100 sections over 250, and four 13-v. batteries. Note closeness of structural design in the first published photo of interior structure of North American bomber.



TIPTICAL RECORD Film strip from photo recorder shows in first and fifth rows a sequence of 100 instrument readings recorded in 10 seconds. At bottom of fifth row is a accelerometer recording system fitted to strain gages. For this purpose flight test of B-45 minutes in 100 sections over 250, and four 13-v. batteries. Note closeness of structural design in the first published photo of interior structure of North American bomber.



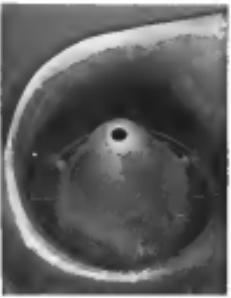
STRAIN GAGE RECORDING Mounted in rear of North American B-45, strain gages are located in aircraft's exhaust pipe. Strain gages are mounted in bridge-balances and bridge-balances have twelve separate channels and 36 cells from which each connect to selected points on strain gage terminal board base in background.



MEASURING JET EXHAUST Strain gages are located in aircraft's exhaust pipe. Strain gages are mounted in bridge-balances and bridge-balances have twelve separate channels and 36 cells from which each connect to selected points on strain gage terminal board base in background.



SEILYAN MOUNT INC. Seilayan instruments are located by twisted steel cables to B-45 aircraft. Strain gages are located in bridge-balances and bridge-balances have twelve separate channels and 36 cells from which each connect to selected points on strain gage terminal board base in background.



MEASURING INTAKE Strain gages are located in aircraft's intake pipe. Strain gages are located in bridge-balances and bridge-balances have twelve separate channels and 36 cells from which each connect to selected points on strain gage terminal board base in background.

"Look-See" Ball Bearings Supplant "Sealed Mystery" Bearings



FAFNIR PLYA-SEAL

— the airline designed ball bearing . . . now with choice of natural or synthetic grease, with Neoprene or Buna-N seals

• Let a few extra pennies save you even dollars in extended bearing life, in smaller maintenance costs, in lowered bearing maintenance cost. That's why Fafnir PLYA-Seals were born . . . practically in aircraft designing rooms.

Save precious space. PLYA-Seals save on mere space than standard metal shielded bearings.

Save maintenance. PLYA-Seals open with a peek! In a few seconds for inspection and lubrication . . . are rotated just as quickly and easily.

Save bearing life. PLYA-Seals, with their self-adjusting, flexible washers and split stainless steel

retaining rings, hold in lubricant better and lock out contamination completely. Frost square met deteriorating influences.

Your choice of natural or synthetic grease, Neoprene or Buna-N seals.

Fafnir PLYA-Seals are sleeveless ball bearings, designed for and with the active cooperative of aircraft engineers. The same cooperative thinking is available to all builders and users of aircraft. The Fafnir Bearing Company, New Britain, Conn.

FAFNIR
BALL BEARINGS
for aircraft

New Plant Practices Cut Costs

Salvaging of expensive hydropress pads and simplifying router operation give substantial savings in Ryan production.

Through a simple method, Ryan Aircraft Co. has cut down the wear of rubber bearing surface of a hydropress pad—cutting operating costs and lessening production problems.

In usual operations, the rubber pad—an inch thick and weighing several hundred pounds—absorbs tremendous loads, absorbed in the metal parts it bears. Usual procedure was to move the pad in the press and when reverse side was worn, the pad was discarded.

Inspection showed that the pad center portion—about four inches thick and containing approximately two-thirds of the pad area—was practically unaffected by wear. To further reduce the wear, the closed area was ground down for about one inch on each portion and layer of new rubber vulcanized on each side of the pad, offering essentially a new side. Resealing was suggested by stamping a R. W. Ruth.

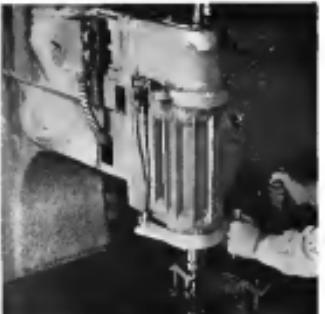
In another production shop, suggested by W. Ward Blaupietro, clampdown is now available

plus tags on casters at Ryan reduced material handling costs and minimized damage to equipment.

Cutting sheet metal on the router is accomplished by holding material to the bit by a revolving outer pilot, consisting of a cylindrical steel bar fastened to the outer table, and held in a guide slot in the outer table, as an extension of a hand locking tool (right photo). Foresight, when pilot was designed, it was necessary to remove the outer barrel of a difficult job, frequently leading to further damage to tool and pilot, when latter was knocked out of holder. Pilot is now made with top held in barrel by Allen set screw (bottom). One side of the shank is slightly relieved to accommodate set screw, when pilot is tapped into place below the quick removal of set



INDICATED BY FENCE, a stem where the front of the work is vulcanized to aid hydropress pad to boost its life



IN ROUTER OPERATION, set base, removable pilot tip corrects router block and guides work



CLOSEUP OF ROUTER PILOT showing various removable tips, Allen set-screw and key, and spiral rod

WHERE SAFETY COMES FIRST!

These Federal H-F Cables are helping to make instrument landing systems safer.

... and you get the same dependability and performance in Every Federal Cable — for Every High-Frequency Application

APPLICATION	FEDERAL H-F CABLES RECOMMENDED		
Airplane Navigation Equipment	K-45	K-51	K-52
Airplane Radio "Wires"	K-104A	K-112A	K-118
K-45	K-51	K-52	
Television and P.M. Lead-in	K-104L	K-104B	K-111B
Microphone-P.A. Systems	K-111A	K-107A	K-109
Radio Broadcast Equipment	K-112	K-112	K-114
Antennae Aeronautic Wire	K-104A	K-109A	
Mobile Radio Equipment	K-112	K-112	K-114

DATA FOR K-45 AND K-51 CABLES

Max. Alternating Current (mA)	K-45	K-51
1000 Mc	1.0	1.0
500 Mc	3.0	3.0
300 Mc	5.0	5.0
200 Mc	10.0	10.0
100 Mc	20.0	20.0
50 Mc	40.0	40.0
25 Mc	80.0	80.0
12.5 Mc	160.0	160.0
Chlorinated Insulation-Oil	10	10
Capacitance per Foot (mf/ft)	14	16
Weight (lb/ft)	10000	3500

AT MAJOR AIRPORTS from coast to coast, Federal's high frequency cables, Types K-45 and K-51, are being used for the most vital of all electronic jobs — in instrument landing systems for aircraft! The selection of Federal cables is a recommendation that assures top performance for all of its varied uses, covering the entire high-frequency spectrum. For Federal makes the world's largest quantity of high-frequency cables, of greatest variety.

Whatever high-frequencies are used — wherever superior performance and dependability are required — you'll find Federal cables on the job. Their unusually low attenuation losses ensure maximum energy transfer with minimum radiation. And their flexibility, resistance to weathering, abrasions and corrosion, mean longer life, even under the most severe conditions.

Write for Federal's latest bulletin — Dept. D-405.

SELENIUM and SILICON DIODES, 1000 Fremont Ave., Newark, New Jersey
in Canada — Federal Electric Manufacturing Company, 121, Mississauga,
Ontario, Canada. — International Standard Electric Corp., 111 West 31st Street, New York 1, New York.

REPRINTED FROM FEDERAL RADIO AND ELECTRONIC EQUIPMENT, 1947, a monthly magazine devoted to the manufacture and use of vacuum tubes, transistors and other electronic components, all of which the Federal Telephone and Radio Corporation, New York, N.Y., is in a position to supply.

Acceptance And Service Testing For Vibrator Power Supplies

Important steps in checking vibrators to insure compliance with existing purchase and maintenance requirements for aircraft radio installations.

By W. E. PRICE, and E. M. HASSELL, Sperry Gyroscope Co.

Increasing importance of radio equipment in all types of aircraft is putting ever greater strains upon certain performance characteristics. This is particularly true of vibrators of which today we are control instead of being of control.

Many aircraft accessories and other types of electronic equipment depend upon vibrator power supplies for converting low voltage a.c. supply to higher voltage suitable for operation of radio tubes in standard base circuits. Some types of apparatus use vibration for converting low voltage d.c. into a power for photoelectric applications. The principal function of a vibrator power supply is to convert the input frequency square-wave voltage into a square-wave voltage at a higher frequency. The power output of the vibrator is usually supplied at the same frequency as the input. The efficiency of the vibrator is usually determined by the ratio of the output power to the input power required for operation at high efficiency.

Operational conditions of a vibrator power supply must be taken into account as to start-up, input, impedance, transformer losses, heating and filtering components which is usually required with a certain power. Because of transformer non-linearity and choice of heating components to assist all sources, overall regulation of a conventional vibrator pack is often a problem. The association that the vibrator pack be operated under a relatively constant load. Power source noise must be maintained in that the vibrator leads back into an extremely low impedance circuit. If this requirement is not met, at when suddenly operating equipment, the power source will drop, the oscillator circuit will open, voltage will drop, and waveform will be deformed into a sine wave but only interrupted at high. This condition may be partly corrected by installation of very high capacity electrolytic capacitors across the supply terminals. In other external conditions, the power factor of such capacitors is sufficiently high so that a full correction of source impedance in the filter is not required. Vibrator insulation also has as basically a matter of design changes achieved by operating the wire at low line frequency.

Vibrator application and type may be roughly divided into three groups: (1) single primary vibrator in a tube oscillator having high voltage (2) a single primary self-rectifying type, and (3) a supply or positive power cluster, shown in Fig. 1. □

■ **Vibrator Power Requirements.** To an avionics engineer and broadcast operator, rather existing purchase specifications must

specify — The test should relate at 100 cps with these tolerances:

1. At room temperature and 13.25° input, 9.8 ± 1.2 cycles, and at 10.6 and 18.4 ± 1.2 cycles.

2. At 100 cps, input, not more than 1.8 cycles, and at 100 cps, frequency at room temperature, but not exceeding 182.5 cps at 17.25° input, not exceeding 131 cps at any input voltage from 10.6 to 16.

Vibration. When subjected to vibration at any frequency from 10 to 15 cps, with an amplitude corresponding to an average of 90°, there should be no damage, or damage of appreciable severity.

1750-daltonmeter vibration, 120, direct current.

Input voltage — 10.6 to 16. Starting voltage should not exceed 18.

Input current — The power contacts should safely handle 6 amp.

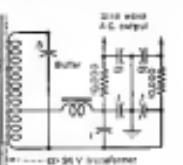


FIG. 1. SCHEMATIC DIAGRAM OF AC POWER VIBRATOR SYSTEM.



FIG. 2. TEST SET for checking a.c. power vibrators.



REPRINTED FROM FEDERAL RADIO AND ELECTRONIC EQUIPMENT, 1947, a monthly magazine devoted to the manufacture and use of vacuum tubes, transistors and other electronic components, all of which the Federal Telephone and Radio Corporation, New York, N.Y., is in a position to supply.

THEY'RE DEPENDABLE ...THEY'RE LYCOMING!

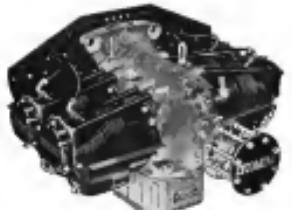
A good airplane is no better than its engine. And in the light plane field "Power by Lycoming" stands out like a beacon in the night. Built to close tolerances, with painstaking skill, Lycoming engines may be depended upon to take you where you want to go—and bring you back—on time.



Lycoming Model O-450
Normal Rated 130 HP



Lycoming Model O-360-C
Normal Rated 110 HP



Lycoming Model O-360-A
Normal Rated 110 HP



Lycoming Model O-360-C
Normal Rated 110 HP

LYCOMING

AN

AIRCRAFT ENGINES



PRODUCT

LYCOMING DIVISION—AVCO MANUFACTURING CORPORATION, DEPT. 88-9, WILLIAMSPORT, PA.

AVIATION WEEK, August 11, 1947

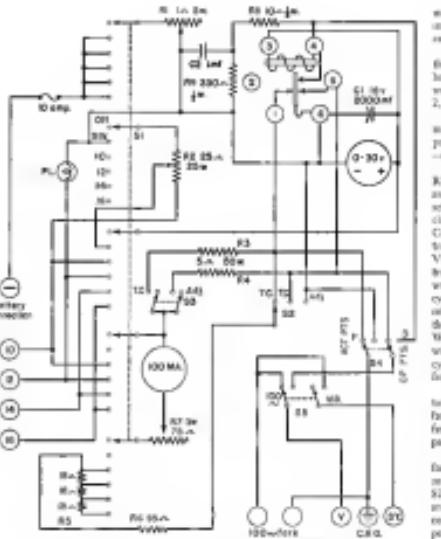


FIG. 3. SCHEMATIC DIAGRAM OF MEU SET FOR POSITIVE VOLTAGE.

at normal handling. All base pins should be soldered with solderable flux. Fins should be cleaned in contact with the soldering iron, as required, and indicated. Check that the frequency when the vibrator base is changed does not differ by more than 1 cycle from the frequency when the base is not changed.

Plates.—The condenser should be wound of tinsel, or plated, to insure insulation from rust or corrosion in protected service.

Capacitor shunt time.—This is defined as the duration of the off-period of a break which causes over voltage on closing the interval when power contacts are closed. Capacitor time on one side should not exceed 15% of the total contact close time. Minimum 13.25.

Time constant.— Basis of closed contact time of each contact in the time of one cycle of vibration should be from 36 to 44% at 13.25 input, and from 36 to 62% at 18.6 and 20.6.

► **Wheeler Test Method.** Specifications are framed in such a way as to insure meeting both the requirements of the potential's equipment and such installation tests as may be applied. Digital acceptance and instant

time tests of vibration may be internally conducted with the same apparatus and in accordance with general specifications. A test set made the procedure a vibration of the type previously described in the previous section is shown in Fig. 2. Other components required for this test are a frequency shifter (in this case a General Radio precision 1000 Hz) anode-type battery, test fixture, and a 100-WATT 75-ohm load.

The test circuit is shown in Fig. 3.

Testing whether for plate supply apply voltage does not exceed the percentage of a unit used for most air power applications. In construction of such a plate supply power pack the load should be adjusted to meet such that may be recommended in the use of 115-120 volt and 60 cycle power to the unit supplied by an acoustical and potentiometer.

Testing whether for plate supply apply voltage does not exceed the percentage of a unit used for most air power applications. In construction of such a plate supply power pack the load should be adjusted to meet such that may be recommended in the use of 115-120 volt and 60 cycle power to the unit supplied by an acoustical and potentiometer.

► **Service Checks.** Following is a summary of maintenance checks which may be performed, effect of a given malfunction on equipment operation, and adjustments that may be made for local correction. (These adjustments may be made by removing the dust cover of the vibrator—usually requiring a special service holding set.)

(See page 36)

way and secondary contacts to close in proper sequence resulting in output low and high contact spacing.

Turnout and application requirements of the previous switches are most carefully, layout as test methods will be described, with reference to the test set shown in Fig. 2, together with the following table.

Starting voltage.—Adjust R1 (Fig. 2) to starting voltage and place S1 in S-V position. Whenever R1 is moved the load should never start at less than 5.

Frequency.—Switch S1 to D-V and adjust R3 for 13.25 input with S3 closed to TC, and S4 to P. Switch S3 to 35 in 100 cycles and set waveform controls for external synchronization with the lock-in control at 8. Carefully adjust the waveform sweep control until the pattern at 35 is clear. Switch S3 to VIB and advance the synchronization control to about 10 on the dial. With a stop-watch, obtain the time required for 50 cycle patterns to move off the base line by adjustment to Fig. 2, the difference in cycle of the vibrator time, the base line may be observed. If the time required for 50 cycles, drift to the right will be caused by increasing the input below 180 cycles and drift to the left will be indication of frequencies below 180 cycles.

Adjust S1 and R1 in combination to obtain an input of 13.25 and 180 and repeat frequency test. Frequency repeat frequency of millisecond against bark is present drift.

Time Constant.—S1 and R1 are adjusted for 13.25 input. Close S3 to VIB, S4 to P, and S3 to VIB. Adjust R7 for full scale with S3 and AD1. Switch S2 to vibrator point 2 and then to 3 (TC and TC1) and read time constant directly as the millisecond. Repeat at 18.6 and 20.6.

Check.—With the switching arrangement used for the base line check, repeat the waveform described for base line with S4 in G, ACT, PES. Patterns should be square and have 50 lines in the top and bottom as shown in Fig. 4. Faults may be broken inductors that power current is breaking or not closing properly. By use of an open span on scope, determine that total basic time does not exceed 13% of total mill second cycle time.

Switch S1 to G, PES, and observe patterns developed by the load due contacts. Pattern should be symmetrical and free of beats at resonance.

In original acceptance tests a 1/2 time voltage test, they are also given a 1/2 load operation test, which is equivalent to 187.5% and thus roughly tested here. They are then tested to room temperature and returned to the same temperature.

► **Service Checks.**—Following is a summary of maintenance checks which may be performed, effect of a given malfunction on equipment operation, and adjustments that may be made for local correction. (These adjustments may be made by removing the dust cover of the vibrator—usually requiring a special service holding set.)

(See page 36)



1. Bauxite from South American deposits is reduced and calcined at the Bauxite Range plant of The Permanente Metals Corporation, where it is converted to alumina. The plant, located on the Mississippi River,

comprises 26 buildings on a 210 acre river site, is capable of removing over one billion pounds of alumina per year. It requires four pounds of bauxite ore to make two pounds of alumina.

KAISER ALUMINUM

FROM ALUMINA TO FINISHED ROLLING, PERMANENTE METALS CONTROLS EVERY STEP IN THE PRODUCTION OF KAISER ALUMINUM, ASSURING QUALITY PIG, INGOT, PLATE, SHEET, STRIP, AND ROLLING.

It's something of an achievement to turn out, in a single year, almost as much aluminum as the entire industry produced in the most productive year before the war.

It's even more of an achievement to gain a reputation for quality and service at the same time. One reason: The Permanente Metals Corporation has joined that operation to its integrated operations—from alumina to the finished product.

The story here takes you from the delivery of bauxite at Bauxite Range to the rolling of finished aluminum at Permanente Metals' Spokane mill, with capacity of 280 million pounds yearly.

But no pictures and text can convey to you the experience of this pre-organized organization to serve the buyers of aluminum... to tackle the toughest problems... to take its place as a vital factor in this age of light metals.

Kaiser Aluminum is a product second to none—not merely as a substitute for other metals and materials, but as their successor in the course of applications where aluminum can add something new: lightness, strength, workability, resistance to corrosion, beauty.

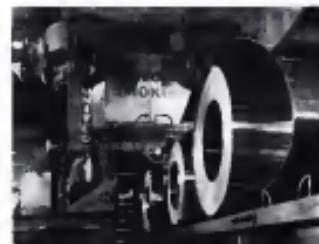
And this aluminum is here today—ready to meet your requirements!



2. Kaiser aluminum pig—this view in the Bauxite Range plant shows the final step in processing. Three point seven billion cubic feet of gas, steam, and coke are used to convert white alumina powder. This alumina is then heated into calcia and goes by rail to Permanente Metals' reduction plant at Spokane and Tacoma, Washington, where it is converted into true alumina.



3. Tacoma, Washington, is the home of the reduction plant of The Permanente Metals Corporation, where alumina is made into basic aluminum. Another reduction plant, at Tacoma, increases the supply needed to keep the Spokane rolling mill operating at capacity. Its reduction process requires tremendous power. Metal is cast into pure aluminum pigs, then sent to rolling mills for rolling and alloying.



4. The rolling mill at Spokane is capable of producing more than 280 million pounds of aluminum yearly. Two-ton mats of rolled aluminum are barreled in long strips. Cut into sheets, the metal is cold-rolled to proper specifications. Color, handling and rolling are under strict control. The rolling process is 21 steps. Plate, sheet and ingot are loaded directly into cars for shipping.



5. That's why Kaiser Aluminum is in demand. Permanente Metals' representatives really give service. Delivery promises are kept. Quality control operations are always at your service. They can come through on demand. Always. Through Permanente Metals' work in the one year 1946, in aluminum, magnesium, magnesium alloys and years of experience in the aluminum industry.

Ready to serve you—today...

Kaiser Aluminum

a Permanente Metals product

DISTRIBUTED BY PERMANENTE PRODUCTS COMPANY KAISER 2000 OAKLAND, CALIFORNIA WITH OFFICES IN: Seattle Wash., United Calif., Los Angeles Calif., Tulsa, Texas, Wichita, Kan., Kansas City Mo., St. Louis Mo., Atlanta, Ga., 500 Madison Ave., New York, N.Y., Montreal, Que., Buffalo, N.Y., New York City, N.Y., Philadelphia, Pa., Washington, D.C.

Short voltage—High battery load, such as engine cranking and radio transmitter operation, will require lower battery supply below the point where radio equipment can be operated in future properly. To meet this severe condition, switch contacts must remain at a very low voltage, also the need may be pointed to in our role so that a power contact opens the battery circuit through the two low resistance winding of the power transformer. Radio equipment can be loaded with higher voltage can be controlled by adjusting contact spring force of solder from low end of the coil.

Short time of primary contacts.



FIG. 4 PROPER WAVE FASTENER for cam歇type vibrator

The FRANK AMBROSE AVIATION COMPANY

takes pleasure in announcing
the appointment of
ARTHUR O. MEURER
as Director of
Aircraft and
Aircraft Engine Sales



29-31 Main Street, Poughkeepsie, N. Y. ... Cable Address: AMBROSE
Branch Workrooms: Oakland Municipal Airport, Oakland, Calif.

Agents for Frank Ambrose Aviation (Canada) Ltd., Dorval Airport, Montreal, Canada
and Frank Ambrose Aviation, S. A., Panama City, P. R.

Established 1922

U. S. Export License No. 795

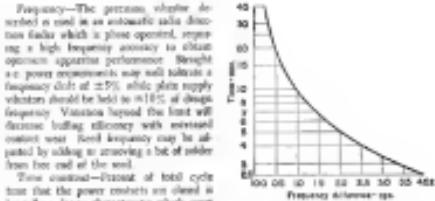


FIG. 3 TIME FREQUENCY chart for comparing vibration and tank cap. difference

Frequency—The permanent voltage described is used in an automatic radio receiver which is phase operated, requiring a high frequency accuracy to obtain optimum equipment performance. Strength of power requirements may call tolerate a frequency drift of $\pm 5\%$, while plain supply vibrators should be held to $\pm 10\%$ of design frequency. Variations beyond the limit will decrease holding efficiency with increased cost. Frequency accuracy may be obtained by adding or removing a load or adding from low end of the coil.

Time constant—Product of total cycle time that the power contacts are closed is basically a design characteristic which must be held to reasonable limits of design center to receive ample power output, low contact current, and power frequency at tank voltage characteristics.

Chatter—Contact chatter or bounce may occur several times.

Balance—Contact chatter or bounce may

occur at the time of closing and cause loss of the pattern at the beginning of each half cycle. In other instances, wiping action of

the contacts when duty or period may cause

a break in the middle of the closed time pattern.

The contact noise should be kept to a minimum since it may well be a source of contact spalling, with resultant contact heating and interference to the equipment.

A large load at the center of contact can

cause chatter which may be

eliminated by using a load on the side of the coil.

Adhesive—Contact chatter or bounce may

occur several times.

Large power vibrators are expensive and are usually well constructed so that minor repairs can probably be made to obtain good service life. In certain maintenance work, it is well to turn to a standard of performance on a test rig, and again inspect vibration and its associated power unit contacts with an ultrasonic before returning equipment to the line. In relatively quick time before cascade, the capacitor may shear and damage its associated series resistor without damage to the equipment or coil, probably, but the vibration or noise may continue under a certain contact condition. Some position type resistors will short while others will open under severe overload. Oil-filled capacitors have been known to develop high leakage under operating voltage, but will check properly on service type capacitor tester. It is advisable to maintain a close inspection on primary circuit connections and plug to ensure that heating will not occur at some point to create a high or excessive supply stress.

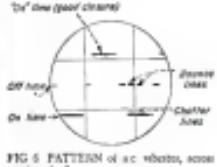


FIG. 5 PATTERN OF AC. vibrators, across sensitive coil.

Superior
PERFORMANCE

an advantage of
special application

Lamb Electric
MOTORS

Specially designed for each particular application and with thorough dependability built into every part, Lamb Electric motors have established a reputation for long, trouble-free operation.

In addition to special application, thorough engineering and exacting manufacture contribute to the superior performance of Lamb Electric motors.

THE LAMB ELECTRIC COMPANY
KENT, OHIO

Centrifugally balanced motor developed for starting power and general laboratory service

Inductively balanced high torque motor with low weight factor is adaptable to many power applications.

Inductively balanced, high torque motor

This small shunt motor can be readily reduced to a wide range of industrial applications.

Universal motor, one for servos and solenoids, portable pumps, grinders and other applications requiring high dependability.

Universal application for this motor includes vacuum cleaners, shavers, electric and cordless tools.

Lamb Electric
SPECIAL APPLICATION
FRACTIONAL HORSEPOWER

MOTORS

Here's Teamwork...

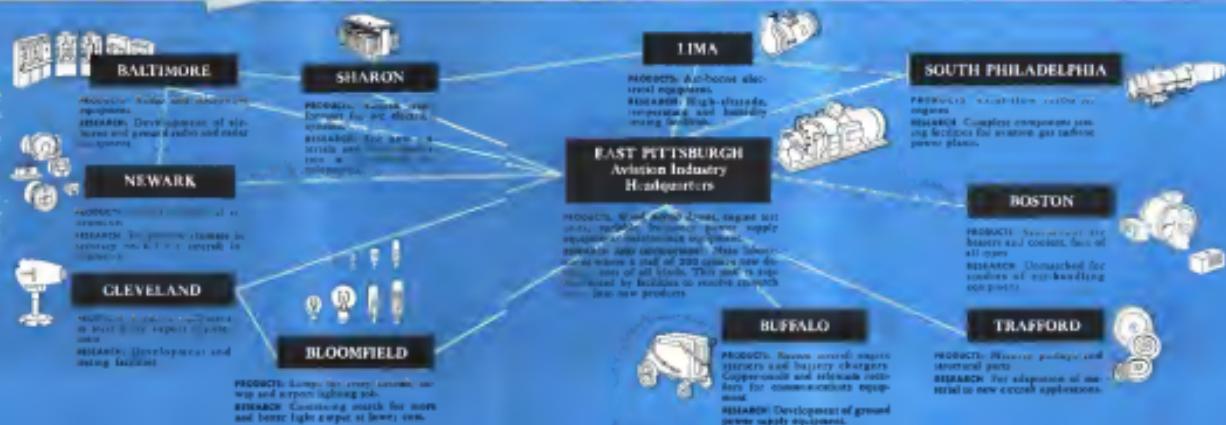


The Wm. Langhorne Aviation Laboratory Engineers work in the field to test all conceivable environmental materials problems.

Washington research, the government and modern production facilities produce the electrical equipment that contributes to the fine performance of today's planes.

Center of all Westinghouse research is located in the laboratory at East Pittsburgh where a staff of 300 explore new and better methods of solving the problems of science.

11
MANUFACTURING
PLANTS...
VAST FACILITIES
CO-ORDINATED
TO PRODUCE
BETTER AIRCRAFT
EQUIPMENT



UNBEATABLE

on the TOUGHEST SANDING JOBS — this SMOOTH Combination

SIOUX RESIN BOND Abrasive Discs



Cut faster with less effort. They're flexible, tough, long lasting, non-loading, give maximum cutting action and remain cool. It's the ideal disc for any and all sanding operations.

SIOUX High Speed Sanders



Ball-bearing construction, heat treated alloy steel gears, permanent lubrication. Cyclone fan for increased ventilation and patented tool spindle lock for changing discs. 3 Models: No. 1250—9" High Speed Heavy Duty, No. 1267—7" High Speed Heavy Duty and No. 1283—7" Special.

No. 1267 SIOUX Heavy Duty Sander (illustrated) No load speed 4250 R.P.M. Universal motor operates on A.C. or D.C. Overall length 15" — weight 13½ lbs. A very popular model!

Sold only through authorized SIOUX distributors

STANDARD THE
ALBERTSON & CO., INC.



WORLD OVER
SIOUX CITY, IOWA, U. S. A.

AVIATION SALES & SERVICE

New Luscombe Four-Placer Designed for Room, Utility

Farm and business users are primary market goals for 165-hp. all-metal plane previewed at flying farmers national meeting.

By ALEXANDER McSHERELY

A short new all-metal seater to the flying farmer's program—for a sturdy easy-to-operate multi-purpose farm plane—was announced last week by Luscombe Aircraft Corp. at the National Flying Farmers Association meeting at Stillwater, Okla.

The high-wing, 165 hp four-place Luscombe should fit a variety of rural needs—uses we observed during a recent tour of the Dallas area. The plane is the plane made with Taggart, North, vice president, engineering on a recent Saturday afternoon when the production line was not at work gave excellent opportunity to us to get and discuss long preparation for the biplane line and components already beginning to take shape.

Democratization of the new plane is scheduled in many parts of the country this fall, Luscombe H. F. Kite president, has announced. Depending on ramifications, material flow and other problems the plane probably will come on the market about the first of the year or shortly before.

Price on the four-place is not definitely fixed, but it will be competitive, the new plane is reported. Since the basic plane will have a top speed of 155 mph, the Luscombe Voyager 10—offering the 35.847 T.A.P.—it is probable that the Luscombe may also start out to sell for around that figure, although the white model for fixed gear low-fliers may be dropped to around the \$10,000 mark by additional reported series from Cessna and Republic.

► **Engines a Factor.**—A recent price increase put into effect by Continental Motors is a serious new factor in all four-place plane competition and may make Aerocraft Motors a more prominent figure in the piston plane engine field. It is known that some of the companies, including Luscombe, have studies on models of that low-power engine, 305 hp. Friction engines.

For the original 165 Model 11 is powered with a Continental 165 and, possibly, the production plane will use the power plant exclusively, at least until such time as its influence is obtained. Since the States are a Franklin, the Voyager would have an off-

set of 25 ft. and fuselage length 27 ft. 50 seats are removable to permit easy loading of large cargo through the wide doors in the 53 cu. ft. of cargo space to 10 ft. 6 in. high.

► **His Good Visibility.**—From the cockpit standpoint, the new Luscombe is well suited for any lightwing airplane we have seen. Large side windows give the usually reflected back seat passengers a chance to look out, and a large back window and two windows at the top of the cabin make overhead visibility less of a problem than in most high wings. A long, inexpensive, washable, gray, good forward vision and the engine is mounted at an angle that lets the pilot see over the side as there is little or no need for turning to the right.

Except for the high wing and the conventional tail gear the fuselage of the new Luscombe looks a bit like that of the Nixon in general structure, a monocoque which is stressed in the wing-fuselage cut surfaces and the "fuselage" for the last 10 ft. has a narrow cabin taper back to the tail. The Model 11 has more cabin room—width in width and length—than most of its own type—and it is quite easy to get in and out of the plane due to its side doors. Door windows open with additional control.



New Luscombe Model 11 four-places sales.

leaks through ducts and a cost over the break even.

The newly developed Lorraine flexible landing gear, which also is being adopted by the two-place models in a light version, has already been subjected to extremely rugged drop tests and is expected to make both two and four-place mass production by early November. The company expects the stick controls which Lorraine has used hitherto. A three-wheel or a single-wheel control can be used in the production version.

► **Designed for Low Cost.**—The Lorraine factory has been working consistently on lower production costs and thus drop airplane price to consumers. Presently the policy will continue with the Model 18 on the theory that the lower the price of the low-place the higher will be the volume of sales.

Going back to the Marion Viper— which is the best seller currently in the personal plane market—analyses show that this is due not only to its relatively low cost but also the fact that it is one of the easiest and safest two-place for the solo type lightplane pilot to fly, and can utilize small fields which most other planes of its capacity cannot.

Lorraine is seeking to provide a plane with more payload, room and speed than the Viper, to give a plane in size and rate to fly and also give the important advantage of all-metal construction. If the Lorraine can do all this and sell for around the same price or even lower it will quickly become a serious contender in the low-place market.

There have been a few cutbacks already—and there probably will be more—of the fact that the new low-place designer must spend a few of the sleek straight lines to do the heart of the airplane in a field of more rounded and rounded lines. In my opinion it is a good modulus when measured against the experience of many years spent in ultimate take-off.

Knowing that the helping order only some day and cuts a few order from the plane's cruising speed it is held that the

newspaper are more comfortable, better of the additional room they will be better suited with the plane.

Perhaps the Lorraine is the closest approach yet to a utility four-place to be sold at a low cost. If so, it can be popular acceptance on merit if it is as safe as the old Ford Model T (which it isn't by my words).

Flying Farmer Requirements

Enclosed Aeroplane Corp., Negro, at new low-place will fit the specifications laid down by the National Flying Farmers Association (Aviation News, June 3, 1947) for two-place. Robert Watson, NFFPA president, says the flying farmer wants:

- A plane built to withstand rugged use.
- Removable seats to provide extra space for bulky objects.
- Strength.
- Large wheels and balloon tires for easier landing and takeoff on soft and rough ground.
- Doors that stay locked, windows with less rattle.

- Seat cushion with wear cushion.
- Engine reversibility.
- Quickly removable windshields.
- More power for greater angle-of-climb on takeoff.

New Wisconsin Bill

The Wisconsin state legislature has passed a bill expanding the power of the Milwaukee Law Censors Board for the issuing and development of airports. The law-making process gave the committee the right in veree report findings and conclusions to issue the bill to the legislature.

At the end of the year, Siler deliberately sought to diversify its business by adding some commercial products. It started long-haul passenger work on some Indiana short-haul lines and continued others. Now it is still strong in the manufacture of aircraft parts by a subsidiary, in having the processing and dairy equipment. Further diversification may be found on January 1.

Because of the discontinuance of certain products and before the economy again faced change following the war was not fully completed during the period, Siler ended its fiscal year April 30 with a loss on operations of \$12,265,000, an item of \$11,400,000. After carryback and current profits to credits, net loss stood at \$109,865.

New Beech Dealer

Carl Wueston, former Beech general sales manager has formed Wueston Aviation Inc. to do, in Orlando, Florida to serve as distributor for Beech and several other aircraft. Plans have been drawn for branch offices in Jacksonville, Miami, St. Petersburg and Tampa. Wueston plans an aggressive campaign to expand Florida's small aircraft program.

Solar Develops New Gas Turbine

A low temperature gas turbine engine for aviation needs can be in commercial operation or under development at Solar Aircraft Co., San Diego, with completion scheduled about next January, the company's annual report shows.

Solar believes the engine can be used to generate electricity in large places, as well as a prime source of power in aircrafts or light planes. Company has the proposed design and construction of a larger jet engine for light Navy craft.

► **Marshall Production.**—Marshall is also busy, meanwhile for reciprocating-powered planes will constitute the bulk of Solar's aircraft production, but its jet engine can generate from 100 to 1,000 hp. Marshall is taking an active interest in research development of aircraft engines.

Solar has several outstanding military research projects in the jet field underway, in addition to development of its small engine. One of its most important, however, involves an engine cooling of metals to a method of raising permissible operating temperatures. A research contract on test new heat resistant alloys in exhaust manifolds might have implications in jet work.

► **San Diego Expansion.**—With most of the research work carried on in the San Diego plant, the largest part of the activity at the Don Mullan factory is the manufacture of aircraft parts of all types, including western aircraft parts and other parts for propellers. The San Diego plant, however, of course, has field production, due there are more jet engine parts.

And, for top performance—in every type of aircraft at any altitude—there's one more test worth making. That's a test hop on a tankful of Standard's aviation gasoline.

STANDARD



Standard Avocado Gasoline
Standard Aviation Lubricants
and Hydraulic Oils
Gulfstar Motor Tires, Tugger Oils
Atlas Almond Tires, Rebar
and Accessories



"Operation test tube"

It takes a test trip to put all an aircraft and get into production these days.

And, for top performance—in every type of aircraft at any altitude—there's one more test worth making. That's a test hop on a tankful of Standard's aviation gasoline.

If you're like other folks who fly, you'll like the prompt response to the slightest signal from your throttle hand... on take-off, climb and cruise.

That's just one advantage you'll find in using the popular Skyway Service offered by Standard Oil Aviation Dealers at hundreds of convenient fields throughout the Middle West.

They're always ready with a cordial welcome—with helpful service—with meticulous aviation fuels and lubricants and other flight necessities.

STANDARD OIL COMPANY (INDIANA)



Visibility, maneuver are factors of new low-place Lorraine.

Big Names in Aviation



These names stand out in the aviation field—and every one of the companies represented by these familiar trade marks has adopted one or more Whiz Aviation Chemical Products! What more need be said? ★ The complete Whiz line of maintenance chemicals specially engineered to meet aviation needs includes: aircraft cleaners, polishes, waxes for aluminum and painted surfaces, hydraulic fluids, windshield cleaners, anti-corrosive compounds, fast-acting paint strippers, aircraft deodorants, and many other aviation maintenance chemicals.

Use New Seaplane In Float Base Survey

Development of a special Lockheed Model 44 "2C" flying seaplane has been revealed by Thomas M. Weyner, chief of the CAA's Seaplane Facilities Division, who told New York Region members of the Aviation Writers Assn. that he had been flying the "fast amphibian designed solely for water operation" on a survey trip through the south and east.

Mid-section of the plane is specially strengthened and revised to take the flat floats, the Continental engine has been modified and features intercooling, and the craft's wing is of new design. Also fitted is a variable pitch propeller. And to supply current to the plane, there are three small "turbos" along the fuselage.

Mr. Weyner is using the Lockheed to conduct local interests through the country regarding suitable seaplane bases. CAA said, in fact, one 250 acre seaplane base would be available to cross-country seaplane pilots approximately every 125 mi. "Future let alone is to establish acopter service and seaplane facilities, both of which should be 'the biggest hindrance block to the growth of seaplane flying."

Contract expenditure for the 150 bases is estimated at about \$17,000,000, or an average of \$10,000 per base. And since many water facilities now in operation were set up only a fraction of that figure, practice is



LOST AND FOUND DEPT.:

Image of new whistlers or safety apparatus. Motor Search and Rescue, mobile group of men, flying search airplanes, newspaper and radio men joined to conduct birds for missing persons. Special plane for this purpose. Believed first of its kind, apparatus will be financed by pilots through sign-up basis, first cost \$10,000. State aviation department will withdraw money received for fuel and oil at no match operation. Organization's plan calls for one plane to be used in each state, and one or more mobile where planes are required. Acting as its center work where necessary will be forest service, with its "airlift project"; CAA and 190th Fighter Squadron of MacArthur Corps.



SUPER CRUSERS IN SPAIN

Display of two Piper Super Cubs and a J-3 "Tinie" at a recent fair at Madrid, Spain, in one of several foreign exhibits of American light planes which have been reported recently as successfully on placing. Increasing emphasis on export aircraft sales has led to the show, sponsored by Republic, Lockheed and Eastern, Spain, Cuban, Tapis, distributor for Spain, Spanish Motors and Tengen, San Bedfodders at Madrid.

kind of well-rounded accommodations featuring major rooms, deck, service, laundry, and parking facilities.

Included are plans to establish bases in state forest areas, land, and with a park, picnic and camping grounds, and resort hotel facilities to be created as soon as possible by private interests with full government encouragement. Weyner indicated that both government and state agencies are proposed to lease some acreage at no rentals for rates.

In locations as situated on suitable bodies of water, state and county transportation authorities should then receive financial assistance to build roads, including a 3 ft. drop channel, thus enabling planes and coastal fleet boats to reach the water level contact Teton, Idaho, has such a logical outlet for commerce. It would be a 400 ft. walk to 4,500 ft. long water strip in the backwash but 10 min. drive from the heart of the city. Rail road肚 could be explored as making efficient landing stage.

In conclusion, Weyner reported that the seaplane base has already incorporated in the American Guide has been published separately in a new booklet, "Seaplane Bases." First issue is being distributed.

New Bell Dealer:

A new customer, founded by Paulson Ltd. of 4,000 ft. of King Air Chats Co. Ltd., Belfast, has been formed in England as a dealership in the British Isles for Bell Aircraft Corp. Helicopters. It is a Bell Helicopter Sales Ltd. of Liverpool, Eng. Headquarters of Bell Bell will be at Scottish Aviation Ltd. or Ardmore, Scotland, a new company which has a substantial financial interest in the new organization. Maintenance and service facilities and a training school for the pilot and mechanics will be established at Ardmore.

Ohio Operator Reorganizes As Richland Aviation Inc.

Richland Aviation, Inc. of Mansfield, Ohio, the new name of Richland Air Service. The new aircraft sales and charter service company, reorganized as a separate division of the former company following an industry bankruptcy proceedings in Cleveland Federal court.

The new 12-member board of directors of Richland includes Robert E. and Roger J. Mack, officers and sons of the founder of Ohio Biscuit Co. G. H. Kreisel, official of Mansfield Tin and Rubber Co., Ray Gandy, manager of Richland's Cleveland sales branch, and V. E. Pfeiffer, credit manager of Standard Oil Co. of Ohio.

The reorganization was effected through liquidation of about \$330,000 in cash and other assets and the use of common stock for with \$100 in cash.

Larson Heads Sales For TEMCO's Swift

Building up its marketing organization for handling the Swift, Texas Equipping Manufacturing Co., Dallas, has appointed Larson Larson sales manager of the new regional divisions.

Although most accounts with Addi-Emco Products Corp., Larson is a former employee of North American Aviation, Inc., as are most other for TEMCO personnel. He has a pilot's rating 1933 and has an aeronautical engineering degree from Los Angeles State University.

In another sales personnel return, Safe Flight Instrument Corp., White Plains, N. Y., named Arthur S. Trower vice president. Formerly sales manager of South American Corp., Trower will now direct sales of Safe Flight Instrument

GENERAL CONTROLS

in the Spotlight!



Unsurpassed *h-e-g* valves for aircraft

Underactuated *h-e-g*
any pressure, regardless of

vacuum, pressure, or resistance
and flow control for every aircraft application

Right Photo with Low Pressure Dept. - Long Left

moment recognition and overpressure safety

For complete specifications, inquire
through Factory Branches,

new Catalog 122 from
or write direct to

or fax to: Disney

GENERAL CONTROLS

Manufacturers of Automatic Pressure, Temperature & Flow Controls
for Aircraft, Spacecraft, Missiles, and Industrial Applications

KC, Dallas Compile Local Air Studies

A mounting community organization of the KC and other airfield authorities is evaluating air studies just completed by the Tulsa and Kansas City Chambers of Commerce. The Dallas study results show that aviation in the community employs 4,500 persons with a total payroll of more than \$15,000,000. The Kansas City payroll of \$16,000,000 to \$20,000 employees totals up to 12,000. Headquarters, which includes 1,000, is 70 percent of the total amount.

Other centers that in addition to airfield operators provide a great amount of money from \$50,000,000 to the residents of the city of which about \$7,500,000 is contributed by Laclede's Airline Corp. Other large non-airline income producers are 32 persons operated airports employing 370, 700 air taxi crews from employing 1,700, 13 dealers and distributors and 15 flying schools with a total enrollment of 300.

Kansas City's aviation income, as estimated by that panelized by TWA, totals over \$3,500,000 from the airport and base, which 3,000,000 from local TWA, which is 10 percent more than \$1,000,000 from the 100 non-airline operators, and \$667,000 from 100 operators and \$363,750 from air cargo companies. During 1946 a total of 17 Kansas City fixed base operators grossed \$2,829,211, those grossing more than \$600,000 each.

Sales Trip in Navion Brings Enthusiastic Report

A four-place North American Navion used in a 10-day test of its flight characteristics, including a 100-mile radius, 6,000 ft. at 100 miles or 15 to 17 miles at a total cost of \$341.95 including fuel, oil, storage, maintenance, liability, hon and insurance, but excluding depreciation. Cost per mile was 1.3 cents and cost per hr. of operation was 14.47.

The plane is built by North American to the Beech Manufacturing Co., Kansas City. Mr. Lee, the experienced use 18 G Machinist Jr. part, estimates that to cover the same territory by automobile would require about 6,000 miles and consuming 72 to 75 miles of 14 to 15 miles. It would be necessary for the automobile to drive 8 to 11 miles per day, a week down the line, the first week probably to cover the general, leaving nothing to live on for sales contacts.

Most of the 300-mile miles were made up by reduced fuel consumption to the larger and airport buildings maintained by Beech Manufacturing part that the business of the ultimate revenue from airport managers and operators being leveling in a personal aircraft is far superior to that obtained when the trend is to and that the ultimate value to the company of using a plane for sales trips is an important consideration.

Urge Market Study By Dealers, Distributors

Greater use of available material is demanded to market in interest in studying the needs of new markets. The need is emphasized distribution and dealers urged at the recent Atlanta Distributors and Manufacturers Association mid-summer meeting at MacKenzie Island.

Thomas G. Evans, Philadelphia, ADMA Manufacturing Chairman, used a legal threat to insist in which a distributor in an area where 10,000 buyers in or out could analyze his potential sales of an airplane must close by applying the manufacturer's replacement rate on the item to the number of planes and then determine for the potential market at the current purchase market price. It would be up to the dealer for the exact effect which he can expect to get.

The manufacturer, chairman, also discussed advantages of local trade clubs held by distributors to promote sale of specific products and to bring about more and stronger mutual relations between distributor and dealer. Cooperation of these firms in supplying display models, promotional material and company representative at exhibits is an important factor in the success of these meetings which are also advantageous to the manufacturer. These points out. They enable the main feature to result at a single meeting a large group of dealers of a product giving them an opportunity to exchange information about the product and also to learn its potential.

Typical of the new market induced afterburner aircraft was one held recently by Beech, Evans, Milt. The distributor with 160 persons attending the one-day meeting, talks by G. S. Davis, Charles G. McVay manager, Harold Dillier, Aircraft Tool Inc. sales manager, and Wayne Carl, Macau aircraft representative of Good year. Tom & Robert Clegg, and subcontractor's meeting partners and demonstrators of various tools, equipment and parts were on the program. In addition to speeches and dealers, a number of representatives of major aircraft attended the Miami show.

Only 443 Airports Score High

Reports of a recent study by Aircraft Owners & Pilots Association indicate that only 443 out of more than 3,000 airports in the country was approved as meeting standards set by the association for safety, service and economy.

The survey, which is continuing, is being made by individual ADPA members who report their findings to Washington as pointed to. Main objective of the study is to urge all the good airports for recommendation to the 52,000 ADPA members to go into the field and standard fields in the country. Contractors will be urged to the 443 high score airports with ADPA's endorsement as being "a credit to aviation."

BRIEFING FOR DEALERS AND DISTRIBUTORS

AIR SHOW RESTRICTIONS—A new Civil Air Regulation part GI is reported in the railroad zone to be exceeded for safety comment—which will reduce to CAA at least part of its rights to regulate air shows. Inquiry indicates that CAA lost most of its rights in response to those with the revision of part 10 which was adopted in August, 1945. Presently the Administration had been authorized to supersede those and grant certain rights or else to the general aviation when the show does not specifically condition as to equipment, flight sequence, etc. Now about all that CAA can do is to enforce regulations about shooting over roads, etc. But the by far the most valuable marketing they plan as long as it doesn't interfere with other.

NEW LIGHTPLANE SHIP UNIT—National Aeromarine Corp., Wings Field, Atlanta, Ga., is preparing to market a lightweight Velp unit which can be incorporated in standard lightplane cabin configurations. It is one of the first of a series of aircraft to be developed by the company for the general aviation market. For figures on NARCO, see Japan Field, president, and Rudy Carleil and A. B. Applequist, vice president. The company is busy working on its development with the Heinkel aircraft plane project and will continue to serve as national aviation representatives for Heinkel Co. in addition to its development, manufacturing and technical design operations at Wings Field.

NATIONAL CAUDROL LIGHTPLANE—Vanguard for 159 lightplane units in National Guard military and liaison units have been manufactured. Plans will be announced and influenced for 100 to flying into a year as training. Forum AAF plans who are just 1/2 or 1/3 the physical requirements are eligible if they attend a 10-day orientation course on ground base and liaison and observation work at Ft. Sill, Okla. First class starts Aug. 15, second class Oct. 17, and other classes are planned to follow as needed. Non-fliers who want other requirements may be shown for pilot training in an 11 seat aircraft at Ft. Sill and San Marcos, Tex. In addition to 100 Piper L-6s and Stinson L-5s which are now being received from surplus for modification for use in the program, 47 North American L-17s (Navion) and 376 Aerom L-16s (converted Champion, Invader, Invader) will be assigned to the program.

CROSSWIND GEAR DEMONSTRATIONS—Demonstrations by GAA of the Piper J-3 Cub plane equipped with Cuday gear landing wheels for crosswind landing was an effective factor in the successful Midwinter campaign for continued development of the Midwest downtown airports. The plane is also circling around the country in demonstration of its ability to operate crosswind, competing among other planes, at the National Forum. Forum has been given a demonstration at Milwaukee, Wis., and will make its first public demonstration at the Forum. The Forum is also scheduled for its next Washington demonstration to CAA. Harry Copland, vice president who first started at 1943 and has been named personnel from manager to the Third Region CAA Administrator at Atlanta, plans to demonstrate the Cuday gear shortly at Atlanta.

COOPERATION NEEDED—Success of the proposed Los Angeles-Washington private airline will probably be greatest largely in the cooperation of aviation officials along the 60-mile stretch. If the relation between the two cities can be at their best, they are equipped with standard markings—state as close as possible to their airports and publish by their service to the flying public who use the route it would well be in all the biggest cities to promote of private flying which has been but little known. The local airports and operators will benefit from the new business which should steadily increase if the proper service and facilities are provided and as more firms benefit the advantage of following the route. Originally proposed by the Los Angeles Chamber of Commerce the forum was not been approved by both CAA and the Personnel Aircraft Council and both representations expect to cooperate in the survey flight along the route planned soon.

DEALERS GET LAST NAVION—North American Aviation, Inc. has completed sale of its inventory of four Navions. It is to its distributor and the 1st and 2nd largest dealers in the country. The 1st and 2nd largest dealers in the country are dealers' health will be the last to be obtained by all. First Aircraft Corp., San Diego which purchased the three larger production probably earliest in October. North American will continue to operate in Canadian sales and service because the Navion is not suitable for Canadian and American for the benefit of Navion owners in the two and there are no sales and service facilities for the Navion. The 3rd Navion which remained at Ingleside when North American stopped production 256 was to dealer and the remaining 85 were purchased by the Army Ground Forces and National Guard with delivery designation L-17. The aircraft are used lightplanes about.

—ALEXANDER MASTERY

VIKING *

DAF II



chosen for the King's Flight



Vickers-Armstrongs' long experience in aircraft design and construction makes the Viking the safest and most efficient aircraft of its type in operation. That is why four Vikings were chosen to form the King's Flight, and used by Their Majesties the King and Queen and the Princesses during their South African tour. The Vickers Viking has also been chosen by British European Airways and other leading airlines.

Vickers-Armstrongs



Limited

AIRCRAFT SECTION,

VICKERS HOUSE, BROADWAY, LONDON, S.W.1

SHIPBUILDERS * ENGINEERS * AIRCRAFT CONSTRUCTORS

AIR TRANSPORT

Mishaps Involving Larger Planes Boost Passenger Fatality Rate

Four accidents occur during first half of both 1946 and 1947 on domestic airlines; fair safety record still possible this year.

Passenger fatality rate on the nation's certificated domestic airlines probably will be higher during 1947 than at any year since complete safety statistics became available in 1939, but there is no reason doubt whether the causes of the past seven months will sustain the publicity, concern and forewarning that have been generated.

In case of nations' standards, the U.S. census' record of 1.5 passenger deaths per 100,000,000 passenger miles during the first half of 1947 and 4.4 during the first seven months would be exceeded. To make doge, American operators approach the safety of their men with a determination during the past 10 years.

► **Precious Record.**—In 1946, the domestic airlines had 1.25 passenger fatalities per 100,000,000 passenger miles, but that was 1939's record of 1.2. Rate during the ten years from 1940 through 1945 ranged from 1.52 to 3.66. Should the causes go through the anomalies of 1947 without a letup, the rate this year (assuming a 20 percent increase in traffic over 1946) could be reduced to 2.1.

On the other hand, the record of 1946, which also approached the safety standard, has shown a continuing a higher fatality rate per 100,000,000 passenger miles than has the U.S. including overseas operators. British carriers reported a fatality rate of 11.4 during the last seven months of 1946 and an average of 33.6 during the five years from 1941-1945. (Mark the U.S. international record in 1946 was 3.37.)

► **Comparison With 1946.**—In addition to the same number of fatal accidents—four—recorded on the domestic scheduled services during the first half of both 1946 and 1947, fifteen passengers and 12 crew members were killed in the first seven months of 1946, while all four accidents in violent DC-3s. One hundred and 65 passengers and 13 crew members were killed during the first half of the year, when three of the four crashes involved DC-4s.

In U.S. international operations, but field accidents had taken place during the first half of 1947—the Pan American Airways crash at Verdun, Syria, June 19, when seven crewmen and seven passengers were killed, and the TWA mishap March 11, when a crew was killed through a Canadian airbase over the Atlantic.

► **Unprecedented Loss.**—Accidents involving

large four-engine aircraft, enforcement conditions to required or imposed for visual conditions.

The Board urged that minimums recently set with respect to minimum altitude be strengthened over high peaks by lower plane category in passenger aircraft. Some degree of standardization has already been achieved in western U.S. but the special hard fact that reduces aircraft visibility is not in safety grounds.

► **Recommending.**—Last—It was recommended that pilots not be permitted except in emergency, in its full, prescribed standard minimums in instrument weather conditions. Further, no clearance for instrument flight under these minimums would be issued by Air Traffic Control.

The President also urged that minimums be revised to include the results of recent experience in passenger operations for low altitude flight from the present 180 ft. to 1,000 ft. above the runway except for such special cases under visual flight rule conditions as may be specifically authorized by CAA.

It was suggested that where pilots of passenger carrying aircraft, flying in or above the prescribed minimum instrument altitudes exceed visibility conditions suitable for visual flight they may descend below such altitude and continue their flight at altitude taken down to 1,000 ft. above the runway unless approved by Air Traffic Control for such descent. That is, pilots have three miles visibility and will be required to descend to 1,000 ft. above the runway unless approved by Air Traffic Control for such descent. That is, pilots have three miles visibility and will be required to descend to 1,000 ft. above the runway unless approved by Air Traffic Control for such descent. That is, pilots have three miles visibility and will be required to descend to 1,000 ft. above the runway unless approved by Air Traffic Control for such descent.

► **Comments.**—C. G. Smith (PAA) commented that the record of 1946 was

unprecedented among transports equipment accounted for wire fatalities for the first half of 1947. First was killed when a Northwest Air Transport Service passenger DC-3 crashed at Cornell, N. J., Jan. 5, two died in a Skid Air Service C-46 composite aircraft at New York, N. Y., Jan. 6, killed in International Air Transport passenger plane at Huntington, Del., Feb. 5 and two in a U.S. Airlines C-47 composite craft at Charlotte, N. C., March 14.

While airplane accidents exploded for headlines, a comparison with the officials' safety record this year is instructive. During the first few months of 1947, 3,765 persons were killed and 20,325 injured in railroad train wrecks.

Meanwhile, the President's special board of review recommended to the month record six recommendations to prevent aircraft collisions with terrain. The return to a direct approach of the safest instrument landing system—Category I—was recommended. Other recommendations included: (1) that pilots have three miles visibility and will be required to descend to 1,000 ft. above the runway unless approved by Air Traffic Control for such descent. That is, pilots have three miles visibility and will be required to descend to 1,000 ft. above the runway unless approved by Air Traffic Control for such descent.

► **Emergency Step.**—John M. Ladd, CAA chairman and chairman of the special board, said emergency steps are necessary to prevent pilots from "feeling their way down."



TEST FLYING STRATOCRUISER.

New photo of first Boeing Stratocruiser on test flight at Paine Field, near Seattle, last Friday. In initial stage of testing plane made seven flights in 10 days.

Laramie Accident Blamed on Pilot

The accident in which a MATS Air Transport Service C-45 crashed near Laramie, Wyo., last Oct. 17 probably was caused by the pilot's decision to maneuver his plane at a dangerously low altitude under extremely adverse weather conditions while attempting to land, a CAB report on the accident states.

A conclusion, later, was that the pilot's negligence in planning a flight route in an area where mountain weather conditions were known, without making arrangements for alternate alternate airports, then had invited. All 13 persons aboard the craft, bound from Oakland, Calif., to Newark, N.J., in a nonstop flight, were killed in the crash.

Blaming "bad" weather had been discounted [Chesney], and ultimate [Denver] had turned to human instrument pilot weather conditions, and having been advised that Laramie weather was being reported below safe minimums, the pilot should have sought assistance. Since Laramie was a sheltered weather alternate, CAB declared, instead, the pilot elected to attempt an approach at Laramie.

Defense of the pilot can be questioned, however, in light of reports after a hearing before a panel with a majority of CAB members after having observed that weather con-

ditions there were extremely adverse (wind 10 miles, ceiling 400 ft. with snow); although the pilot had almost two hours' fuel aboard, it would still have been possible for him to proceed to a possible alternate for a safe landing, according to CAB.

In attempting to keep the field in sight while circling the area at a very low altitude,

the pilot evidently immediately lost control of the C-45 by permitting it to land unassisted, and before recovery could be

completed a wing tip struck the ground.

CAB Denies Bid

For Free Rides

Two attempts by a Congressional committee to obtain blanket opposition from CAB to aircraft transportation have been rebuffed without alternate inquiry, the hand asserted. All 13 persons aboard the craft bound from Newark, Calif., to Newark, N.J., in a nonstop flight, were killed in the crash.

First, when some requests of Rep. Charles Whigham (R., N.J.), chairman of the House Interstate and Foreign Commerce Committee, He sought free transportation in Europe, Asia and South America for members of various congressional committees willing to radio radio stations abroad to Congress to appropriate money for the trip before adjournment.

Previously CAB—CAB stated that the Civil Aeronautics Act prohibits granting the free rides requested. The Act, however, does not prohibit the use of the Board's funds. Rep. Whigham made no claims for this transportation if his Office officials, airline employees and their families,

were to be considered.

Second, when the House Select Committee on Small Business proposed

to appropriate \$100,000 for the purpose of

assisting small aircraft operators in getting into the European market, CAB denied the request, pointing out that the CAB's own budget would be exceeded by the proposal.

and a few others, but not Congressmen.

The Economic Regulation Act that may restrict shipping special permission to foreign lessors or foreign transportation by foreign lessors not specifically mentioned in the Civil Aeronautics Act may apply to the Board for such authorizations. But grants ordering five miles can not apply directly to CAB.

► **Protections Necessary.**—This step is considered necessary to protect the industry from such abuses of free transportation as have occurred in the railroad industry. Actions relating to the law are unconfirmed, their roles can be kept up to \$1,000.

CAB firmly maintained its opposition of funds to be used by U.S. and foreign lessors providing for free or reduced rate transportation for group travel, tour companies, tour operators, travel agents, advertising agencies and other entities. The Board felt that the practice might be easily circumvented or made profitable. Another argument raised by CAB will determine whether Pan American Airways, Panagra and other carriers can give less expensive services and foreign air transportation to exchange university students between Latin America and the U.S.

Investigation by Air

Transamerica Air Lines has been working on its contract with the Province of Ontario to fly 7,000 British immigrants to Canada to help relieve a critical manpower shortage in the Dominion (Aviation News, June 19). First TAL C-45 operating under the arrangement landed near Toronto, Ont., last week with 10 passengers aboard.

CAB Denies Petitions

CAB has issued a supplemental opinion in the North Central Area, one denying permission for construction of six electric

AVIATION WEEK, August 11, 1947

READY NOW!



Send for this

New Catalog...

Your guide to

QUALITY

in Kohler-made
aircraft valves,

fittings and other precision parts



The new Kohler Catalog, just published, will give you useful, up-to-the-minute information on the many types and sizes of Kohler Aircraft Precision Parts, including many not hitherto listed, such as steel valves and fittings for heavier aircraft.

Positive action—assured by Kohler workmanship—plus prompt, reliable service, have steadily increased the demand for the Kohler line among America's leading manufacturers of planes. Complete facilities for forging, machining and anodizing are maintained in the Kohler plant.

Kohler engineers will gladly help you with your special needs. Satisfy your requirements with Kohler quality—a 74-year-old tradition. Send for your catalog today.

KOHLER
OF
KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT
ELECTRIC PLANTS

KOHLER CO.
Kohler, Wisconsin
Please send your new Catalog C to:

Name _____

Company _____

Address _____

ERIE Airport Fueling Systems



From the smallest landing field to the largest military and commercial airports, Erie is prepared to furnish complete systems for the safe and efficient storage and dispensing of aviation gasoline up to 4000 GPM. Write for these brochures shown above: describing Erie Dehydrator—Erie Reheated Turbine Pump and Erie JH Pumping Unit. Consult Erie engineers for recommendations.

ERIE

ERIE MEYER SYSTEMS, INC.
Milwaukee and West Bend, Wis.



HOSE FOR USE IN ANY INDUSTRY!

Light, Strong, Flexible

FLEXRAST

SPACIAL-REFRIGERATOR HOSE

This type of high-pressure hose is especially designed for use in the aircraft industry. It has been widely adopted for use in aircraft, shipyards, chemical and basic industries.

SEE

Fig. 1000 for the dimensions of this all-purpose hose.

Viscose, polyvinyl, polyurethane, and other basic types also available.

HOSE

insulated

reinforced

flexible

resistant

chemicals



AMERICAN VENTILATING HOSE COMPANY

Dept. M, 44 Park Row, New York 1, N. Y.
Branch Offices: New Orleans, La.; Houston,
Texas; Washington, D. C.
Home Assembly, Mass. — Seattle, Wash.

AMERICAN
VENTILATING
HOSE COMPANY

FOUNDED
1913

AMERICAN
VENTILATING
HOSE COMPANY

PHOSPHORESCENT • FLUORESCENT • RADIUM



INSTRUMENT DIAL PAINTING

Immediate
Delivery
New Instruments
Maps — Computers

Send your dials to us for accurate repainting. Our facilities conform to the National Bureau of Standards rigid specifications. For prompt service and dependable repair on all types of mobile instruments, ship them to our CAA Approved Repair Station (No. 27831).

SEND INQUIRIES TO DEPT. X

DISTRIBUTORS OF AVIATION SUPPLIES

THE S. A. LONG CO., INC.
650 EAST GILBERT — WICHITA 1, KANSAS

Peruvian Carrier Admitted to U. S.

Peruvian International Airways has won a foreign or owner permit from CAB over the protests of U. S. carriers who argued that PIA is in reality not a Peruvian line but a company partially controlled by American and Canadian citizens.

With Major Charles Young, director of CAB enforcement, PIA is operating between Los Angeles and Montreal via Belize, Ciudad Trujillo, Tucumán City, Peruvian, Mexican, Costa Rica, Washington, D. C., and New York. Peruvian International is already operating DC-3s between Lima and Huancayo. It hopes to inaugurate service to the U. S. and Canada with two more DC-3s by fall, later increasing schedules to one flight daily. **Top Officials**—President and general manager of Peruvian International is Harold L. George, formerly lieutenant general in charge of the U. S. Army's Chaparral Command. H. S. Heart, Jr., formerly commanding general of ATC's Atlantic Division, is vice president in charge of operations. Antonio Tinti, vice president, and now a director of the line, is C. M. Kest, formerly president and chairman of Trans World Airlines, president of Comair Wright Corp., and president of North American Aviation, Inc.

According to the Foreign government, PIA is owned 65 percent by Canadians, 22 percent by Peruvians and 21 percent by Americans. The owner's board of directors consists of four Canadians, three Americans, three Peruvians and a native Italian living in Peru.

Peruvians Admitted—Under the terms of a bilateral air transport agreement between the U. S. and Peru signed last December, the U. S. was given the right to allow Peruvian carriers to operate in the United States under the Peruvian government if substantial ownership and effective control of the airline was not vested in Peruvian citizens. However, in Peru's report, the American State Department also agreed that the U. S. would allow under the air transport part an airline owned at least 50 percent by Peruvians and the remainder by citizens of the U. S. and Canada if within ten years 51 percent of the ownership power is Peruvian citizens.

In his dissent, CAB Member Young is in no doubt that over 50 percent of PIA's stock is owned by Americans. He noted that it is a possibility that Canadian and foreign citizens could control PIA.

Colonel Colodny, which led the opposition to PIA's request for a foreign carrier air permit, did an in-depth analysis. In addition to questioning PIA's ownership and status, Colonel commented that made no sense that PIA not profitably interconnective status requested. Colodny expressed his first PIA might compete unfairly with U. S. carriers by offering shorter service between Washington and New York and Montreal and between Washington and New York, and between Huancayo and Ciudad Trujillo.



Stinson Voyager owner and family prepare for another flight in America's No. 1 Utility plane.

Why more people are buying STINSONS than all other 4-place planes combined!

THE BEST WAY to discover the many reasons for the Stinson Voyager's overwhelming popularity, of course, is to have your Stinson dealer take you up on a demonstration flight. In the meantime, here are a few facts for you to consider:

1 Stability and Safety. Considered as America's most useful personal plane ... carries a useful load of 965 lbs. at a cruising speed of 125 m.p.h. ... offers you and your family (4 people) comfort, economy, and plenty of space for luggage. Unexcelled for business use, too.

2 Lower price. Yes, the new Stinson Voyager and Stinson Flying Station Wagon actually cost less than any other 4-place plane in America ... an advantage made possible by Stinson's 20 years of production know-how.

3 Quality features. Flaps for quick takeoffs and slow, short landings. Hydraulic wing doors for safe, inherently quiet, resistant take-offs and smooth landings. Large inside door, dual inside speaker. Landing and navigation lights. Supercharged engine with controlled ventilation. Seats.

4 High Utility. Considered as America's most useful personal plane ... carries a useful load of 965 lbs. at a cruising speed of 125 m.p.h. ... offers you and your family (4 people) comfort, economy, and plenty of space for luggage. Unexcelled for business use, too.

5 Adaptability. Certified for wheels, skis, floats. Perhaps, like many owners, you'll prefer floats, so that any handy waterway becomes your "flying strip."

FREE—Stinson Advertiser reader's guide to Stinson aircraft, Department S, Consolidated Vultee Aircraft Corporation, 82nd, Michigan.

Stinson

For 20 Years—America's Most Useful Personal Plane

EDITORIAL

Shop Talk by an Editor

With apologies to those who prefer regular columns, we shall return this pig to shop talk today on several current matters which are probably more important to the editor than the reader, but we must have our say to close the air.

Official Details—Keep low publications with all publications important information, but with a high degree of security. No publication, of course, is perfect. So the goal of the staff is to achieve as near 100 percent security as possible. A magazine like *Aviation Week* is concerned with reporting of facts and of industry opinion and trends. You would imagine that a magazine with my excellent attorney rates would be full of criticism, relatively. That is not the case. It may be magnified by letting the march too often.

Aviation News on March 3 reported discussions going on between high officials of TWA and Pan American involving trans-Pacific flights between the U.S. and PAA system. A magazine granted the right to print the news that although Howard Hughes and Juan Trippe had had a meeting the "negotiations were in an extremely weakly" a "not great existence in informed circles." But Mr. Hughes' other day gave the story considerable credence by writing the information.

The *Aviation News* story, which was widely used by the daily newspapers, was denied very emphatically by a TWA vice-president in Kansas City, and the company's house organ, as we recall, carried a rather startling disavowal of *Aviation News*, our predecessor journal.

The official told company employees that such reports were "erroneous and irresponsible" and "without authentic foundation." We have denied since that Mr. John Collygas was not here because Mr. John Hughes' talk with Mr. Collygas may have been taken. But it does not seem to show that companies which have unimportant details of their stories have proved correct in broadening the public and making it more difficult for anyone to believe honest details elsewhere.

Industry Opinion—Every industry magazine such as *Aviation Week*, in addition to covering the detailed news, attempts to carry trends and opinions in the industries it serves. It does this to the best of its staff's ability. In our July 25 issue we reported in *The Aviation Week* page the consensus of U.S. air transport officials interviewed on the relative merits of certain aspects of the various foreign-owned airlines. Two airlines protested, as is their right, and we are pleased to offer their side of the matter in this issue.

Censorship and What Is Confidential—What is confidential? It depends on the person you ask, and when you ask him. There is not an issue of *Aviation Week* or any other publication which probably does not print many things which someone considers confidential. Otherwise there would be no press. The press is under no censorship law in particular. So it is no particular surprise to us that *Aviation Week* has been accused directly and indirectly of publishing confidential information. Who doesn't?

The function of trade editions of a large newspaper wrote the business department of *Aviation Week* the other day publishing an Industry Observatory item on a new military air plane. He wrote "to me that we object to the publication of that paragraph is putting it mildly." The status of the aircraft in question, as you editor and his staff certainly know, is highly confidential. Nevertheless, so far as

we can ascertain, no effort was made before publication to check on the status or the confidential nature of the subject. Frankly I think such flagrant contempt for the rules is unacceptable. —

In the first place, the editor would have appreciated it if the letter had been sent to the people who write this magazine, instead of to the advertising department. No checks were made with the company to advise him as to whether such publications as the company is not permitted to publish. The reference to sales is telling because as a U.S. government contractor that company has its own rules, which are also those of the Navy and those rules often have their own security classification. There are three of them: confidential, restricted, and others, plus their own business. These labels govern what Army and Navy and other Government departments and their personnel can and may not tell about publicly. As far as those Government departments are concerned, those labels are binding. Government contractors are under essentially the same restrictions.

Any reader in these postwar United States knows that the confidential label is as familiar as the Government that it is applied to virtually everything that has not yet been made the subject of a press release, including lists of officer promotions. It is rather obvious that a pressman has not endangered the security of the United States. What east? Twice the experts all disagree.

No one has struck at the heart of the censoring problem more convincingly than Col. Ralphy Wilson, editor of *World War II*, in his column "What's New in the War." In his column he says: "How strong is America in the air?" he asked the other day in his New York Herald Tribune column. "Everybody knows except the American people. The Russian Reds know it. So do the British, and the French and the Soviets. So does every able intelligence system of every nation on earth. Everybody knows except the people who could do something about it, if they knew."

And why do they not know? That story, Col. Wilson says, originated with back stories with the Old World also that "what goes on in that military establishment is none of the civilians' damn business." Against that also, he says, our founding fathers put their faces when they wrote that "separation of church and state" clause.

Colonel Wilson adds "there has been a constant struggle within the military forces against men who did not understand that power—all power—in a democracy stems from the people. Historically War and Navy with dollar-a-year pay have not influenced the people on anything that could be told safely. Thus in spite of the fact that such knowledge was unquestionably in the hands of the intelligence sections of other nations."

Col. Wilson divides war in a good psychological line

for the military establishment in all branches to review the other problem of public relations and military intelligence. *Aviation Week* agrees wholeheartedly.

In the meantime, despite those who try to click on two of our first Washington press lines, *Aviation Week* hopes to continue to inform the people and aviation people specifically, on the significant developments which can affect so much to the country, and perhaps to the rest of the world.

ROBERT H. WOOD



The Sperry Gyroscope Company
is a notable development in aviation history.
All instruments of its usefulness
in aircraft are oscillating, servos, or
have accurately timing circuit.



Can you see the avenues for you
You can be sure of your heading
with the Sperry Gyroscope Company.
Engines revolve from leading velocities
and hours without stops or wear.

AND IN THE AIRFIELD Sperry Gyro and
Loran, are plotting clear up radio, electric
currents through every kind of weather



Sperry Gyroscope Company, Inc.

HEADQUARTERS: EAST MEAD, NEW YORK • DIVISIONS OF THE SPERRY CORPORATION
LOS ANGELES • SAN FRANCISCO • SEATTLE • NEW ORLEANS • CLEVELAND • BIRMINGHAM



The stockpile of lead at the Bowers Battery and Spark Plug Company, Reading, Pa., was just about gone—and a lot of jobs would go with it. Scrap lead was to be had only if someone could get to a war surplus sale and inspect, bid and buy—in a matter of hours.

Thanks to an alert president, C. P. Bowers—and to his company's Beechcraft Executive Transport—those jobs were saved. In a 200 mph race with time, the bids were filed and the materials acquired.

The twin-engine Beechcraft Executive Transport has proved itself in the service of nearly 400 business corporations, economically and efficiently transporting executives, technicians and sales personnel to and

from factory, branches, and markets at substantial savings in time and money. It accommodates up to nine people. It is gratifyingly quiet and comfortable. It is a fully equipped aircraft, for all-season, day and night operation.

As company transportation, the Beech Executive Transport pays its way—and returns a substantial dividend of rest and relaxation for harried executives to whom it gives the time and opportunity to get out of harness, now and then, for needed recreation.

There is a Beechcraft distributor near you with wide experience in company-owned air transportation. Ask him to study your requirements. No obligation, of course.



"Our business," says Mr. Bowers, "requires plants located hundreds of miles apart, from Massachusetts to Monterey, Mexico, and from Macon, Georgia, to Oregon. The fast comfort of the Beech permits me and members of my staff to maintain a frequent, economical, and otherwise almost impossible personal contact with each of these operations. It is not uncommon for me to dispose of my morning's mail in Reading, visit our Elkhorn, Maryland, plants, go to Macon, arriving in mid-afternoon to spend several hours there, then fly on to Houston, arriving in time for a full night's rest."



Beech Aircraft

CORPORATION 

WICHITA, KANSAS, U. S. A.